1. GEAR, NARRATIVE AND STATION LIST

By JOHN S. COLMAN.

In 1937 Lord Moyne took his yacht " Rosaura " on a long cruise in the North Atlantic and decided to add deep-sea collecting to the other activities of the trip. I was fortunate to be taken on as zoologist.

We left Southampton on 21st August, 1937, and returned there on 6th February, 1938, after covering 18,565 miles. We called at the Scilly Isles on the way out, and then proceeded straight to Angmagssalik in East Greenland, where we spent four days. We then rounded Cape Farewell to Julianehaab, the capital of southwest Greenland, and visited several fjords in the neighbourhood. Next we had to double back to St. John's, Newfoundland, in order to fit new propellers in the dry-dock there, as ice had removed a blade from the port propeller in Angmagssalik harbour. This prevented a projected run up the west coast of Greenland to Disko, so instead we went from St. John's to the Labrador coast. In southern Labrador the harbours are not good, as the low, smooth hills afford very little protection from the wind, and the bottom is often hard and poor holding-ground ; we dragged our anchors in two successive " harbours " and had to put to sea each time. After Labrador we visited three of the fine inlets on the west coast of Newfoundland and then proceeded to Cape Breton Island, where " Rosaura " was again forced to go out to sea when the wind freshened ; this, however, was the last heavy weather we had on the entire cruise.

The first part of the voyage ended at New York ; our route was then *via* Charleston, Nassau, Cap Haitien in Haiti, Jamaica, Grand Cayman, Swan Islands and the Bay Islands of Honduras, to Belize in British Honduras. The Bay Islands and Swan Islands turned out to be unexpectedly interesting, the latter biologically and the former by providing enormous quantities of pottery which is probably pre-Columbian, so we revisited them before running south to Colon on the Panama Canal. From here the course was by the San Blas Archipelago of Panama to Puerto Cabello and La Guayra in Venezuela, then by Grenada, Tobago, Little Tobago and Trinidad to Demerara and the Barima River, and on to Para. Christmas was spent in Pernambuco, after which a visit was paid to St. Paul's Rocks on the way across the Atlantic to the Gambia River, up which we went for 120 miles. We then had an exasperating three weeks in Dakar with two visits to the dry-dock, but we thereby missed two severe January gales off the English Channel, and ourselves had almost a glass calm from Finistere to Southampton. The whole cruise was described by Lord Moyne in *Atlantic Circle* (Blackie 1938).

" Rosaura " was a vessel of some 1,500 tons, 282 feet long and drawing about 12 feet of water. (She was lost during the 1939–1945 war). She started life as the cross-channel steamer " Dieppe " and was converted from steam turbines to

diesel engines, but the lighting, heating and capstans were still worked by steam. I mention this because the chief piece of collecting equipment was the steam winch off R.R.S. " Discovery I," which could thus be built into " Rosaura " with the minimum of alteration. This winch had some 3,500 fathoms of wire and did its work splendidly, giving very little trouble. The only place for it was on the deck just forward of the bridge, and this proved to be the best possible position, for two reasons. First of all, the most practicable lead for the wire was then over the bows, and this meant towing with the engines going astern ; going slow ahead on one engine " Rosaura's " minimum speed was 3 or 4 knots, but going astern this could be reduced to 2 knots, about right for plankton work or for dredging. Secondly, " Rosaura " had a very strong idiosyncracy, that of always trying to lie stern to wind ; this made towing over the bows a simple matter, and sometimes neither the wheel nor the engine-room telegraph had to be touched during the hour or more that the net was towing.

For work on the bottom we had a 10-foot Agassiz trawl and dredges 2 and 3 feet across. The Agassiz trawl was on the whole very successful and only came to grief once, when we tried a trawl in 1,000 fathoms off Swan Islands ; about 70 fathoms of wire came up in a knot with the cod-end of the net in the middle ; the deepest successful haul was from 700 fathoms near the Canaries.

Occasions for deep bottom trawling were limited by the scarcity of suitable depths (1,000 fathoms was about our maximum), so the bulk of the collection consists of deep-sea plankton from between about 700 fathoms and the surface, caught in a stramin net with a diameter of 2 metres. Since we did not have closing apparatus, the net was sent down and hauled in open. It was towed horizontally for an hour, or sometimes more, in deep water, and then took about half an hour to heave in, so the catches must contain a good deal of material from the upper layers and the surface. In addition I made several coastwise and estuarine hauls with a small silk tow-net 50 cm. in diameter.

All the nets and frames were obtained from the Plymouth laboratory of the Marine Biological Association, where they were made exceedingly well and with remarkable speed, and the British Museum supplied jars, tubes, formalin and alcohol, of which last I used 45 gallons. Every haul was sorted and bottled off at once unless the ship was rolling too heavily. A plankton haul would take a day and a half and a dredged haul from one to three days, as the sorting was done in fair detail, particularly in the more abundant groups such as mollusca and crustacea.

It was too rough to do any work on the way over to Greenland, so the first collecting was done in Angmagssalik harbour. The bottom is rather like the surrounding mountains, which are steep and rugged, and the harbour has not been charted, so we dredged from a motor-boat close to the rocks where we could find bottom in 20–30 fathoms. Although the depth was altering constantly the bottom was of mud, at any rate in places, and it was extraordinarily rich in life. There were 14 species of bivalves, about as many of Polychaetes, many algae and many crustacea, but curiously enough no crabs. Crabs seem to be rare in Greenland, for in five dredge-hauls and shore-collections I caught only two in all. Otherwise the Greenland marine fauna and flora are both remarkably rich, but are on the whole not

easy to come at. In places like Angmagssalik harbour the sea floor is extremely uneven, so much so that one night when " Rosaura " was shifting her moorings during a gale the echo-sounding gear showed every depth from 14 to 70 fathoms and back again in under a quarter of a mile ; then, again, over the coastal shelf the sea-room necessary for fairly deep trawling is strictly limited by the proximity of icebergs, and the bottom is so foul with glacial boulders that a long haul is bound to result in the loss of some part of the gear. A canvas sock outside the net is absolutely essential. Our one successful bottom-haul off Greenland, Station 6, brought up large numbers of brachiopods, bivalves, polychaetes and ophiuroids ; the coastal plankton also contained many ophioplutei, so that brittle-stars may be a dominant group in these parts.

On leaving Greenland we made for St. John's, Newfoundland, to fit spare propellers as the ice had broken a blade off the port propeller while we were anchored at Angmagssalik. On the way we tried out the 2-metre stramin net for the first time, and rather rashly did so at night. It was a most instructive station, as nearly everything happened except the loss of the net or of the catch. We could not use the port engine, the sea was not running true with the wind and " Rosaura " accordingly lay rather across the sea, rolling heavily, and to crown all the West Greenland current kept driving the ship over the wire. Sometimes the wire paid off ahead as it should, sometimes it grew straight up and down, and twice it went right under the keel and paid off astern on the starboard side. Finally a davit-guy parted but this was countered with a jury tackle from the anchor davit, and eventually the net was brought aboard. Rather to our surprise it contained a rich and very phosphorescent catch, including some eight or ten species of scypho-medusae—more than at any other station. This catch was more phosphorescent than any other, probably because it was the only deep plankton haul made where the surface water was cold.

In St. John's harbour there were many patches of red water which gave quite a distinctive appearance to the inlet. They were caused by myriads of cladocera, each containing a yellow drop of oil.

St. John's welcomed us with an unprecedented heatwave at 92° F., but after we left for Labrador we were told the same thing wherever we went for a fortnight— " What a pity you weren't here two days ago ; this is the first foul weather we have had for months !" This weather limited collecting opportunities on the Labrador coast, and we could not even remain in harbour, as I have mentioned, since the holding-ground was so poor. I did get in a dredge haul from the dinghy between two gales (Station 10), and so found out what the charts mean by describing the bottom as " coral " over so much of this coast. The net came up entirely filled with a branching coralline alga, which evidently covers large areas of a rocky bottom and is itself very hard. It acts like roller-bearings under the flukes of a boat's anchor and must make the holding-ground even worse than bare rock.

We came south down the west coast of Newfoundland and tried out the Agassiz trawl in Bonne Bay. This is an inlet with only 6 fathoms at the mouth, but with 120 fathoms further in where we trawled ; there is no similar depth nearer than forty miles out in the Gulf of St. Lawrence. The bottom of Bonne Bay is of mud, with some stones and a good deal of waterlogged lumber. More than half the animals

were ophiuroids in prodigious numbers, but most of the main groups were represented and the collection was unusually varied for such a muddy bottom. Three large scarlet anemones were rather unexpected, but these appear to have a foot specially adapted for living in mud ; the lower end of the body is solid and hemispherical, and surrounded by a wide and muscular frill ; the anemones came up with the space between the frill and the rounded foot filled with compressed mud, and it seems that the anemone can use this as a more or less solid platform on which to stand. They were problably about 6 inches long when full expanded.

In Liverpool Bay, Nova Scotia, there was a curiously barren beach. The offlying rocks were densely covered with algae and carried thousands of whelks and sea-urchins, but there was a swell running which made it impossible to land on them. The beach referred to looked like firm brown sand, but was spongy to walk on and turned out to be a peat made of sawdust and chips from a small pulp-mill more than a mile up the bay. This beach was quite extensive, over a foot thick, and seemed to be permanent and it was quite a distinct geographical feature. As the pulp-mill was still small and had been in existence only a few years, it will be interesting to see how this beach develops. It is remarkably barren, containing neither polychaetes, amphipods, nor any other metazoa that I could find.

After leaving New York we went to the Bahamas and spent the next two months in the West Indies, Central America, and the north coast of South America. The weather was ideal for marine collecting, with gentle trade-winds and calms, and good visibility for navigation ; no hurricanes came anywhere near us. We made a number of mid-water plankton hauls in deep water, dredged when the bottom was within reach, and at Grand Cayman, Swan Islands, Bay Islands and British Honduras I carried out shallow-water dredging and shore collecting.

The first really interesting catch was a live *Spirula*, which was brought up at Station 15 between Jamaica and Cuba. When the " Challenger " caught its single specimen of *Spirula* in a dredge they naturally thought it was a bottom living animal, but all subsequent evidence goes to show that it lives a planktonic or nektonic life some way below the surface. The " Challenger " specimen may have been caught by the dredge on its way from the bottom to the surface while being hove in. *Spirula* shells occur sometimes in such vast numbers that they form white beaches extending for miles, but until fairly recently the animals themsleves have been very rare in collections. The Cambridge Natural History of 1903 says that there were then only five specimens known, but since then the " Michael Sars " has caught several and the " Dana " about one hundred, so its capture is no longer the event it used to be. Later on we caught three more, all very young. It was interesting to watch the animal alive for some time. Unlike many other cephalopods, such as *Sepia*, it does not lie horizontally in the water but always head down. It swims up and down with its fins, rather slowly, but can also propel itself violently tail first by squirting water from its syphon. (I never saw one eject any ink.) Sometimes it would hang on to the side of the jar for a few seconds, and if one put one's finger in the jar the *Spirula* would at once cling on and nibble gently. In colour the body was white, and curiously rough ; this part looked exactly like the ash of a cigar. The tentacles were reddish-brown, the head blue-gray, and the mantle-edge and hinder

end reddish brown. Right at the after end between the fins there is a round disc, which the older books describe as a sucker. Schmidt (1922), however, kept *Spirula* alive for some days in the " Dana," and found that this disk is a luminescent organ which gives off a steady but dim light (see also Bruun, 1943). I did not see this myself.

Spirula's habit of swimming constantly with its hind end upper-most may explain why it it is not more often caught. If it is startled by the bridle of the net coming through the water and gives a convulsive leap, it will automatically move several feet straight upwards and the net will pass beneath it. An animal like a prawn such as *Acanthephyra*, which swins horizontally, will shoot off in a horizontal direction when similarly startled and may sometimes go straight into the approaching net.

Just north of Turneffe Island, British Honduras, we used the Agassiz trawl in 500 fathoms. The bottom ranged from fine mud to gravel and was bright yellow in colour. The fauna was rich and included large numbers of *Stephanotrochus diadema*, a deep-sea coral, which is a solitary form like *Fungia*, and is unattached when adult. The tissue is a very deep purplish brown, almost black, and it is disappointing that none of them would expand even in cold water in the dark after being brought on board. *Stephanotrochus* is in some ways a rather unwelcome catch ; near the edge there are twelve very sharp vertical plates standing up a quarter of an inch from the body of the coral, which is itself an inch and a half across ; these plates cut up into ribbons such animals as prawns and polychaetes.

While we were in this region we visited the Bay Islands of Honduras three times. They are high islands, separated from the mainland thirty miles away by water several hundred fathoms deep. The population are mostly English-speaking, as the islands were an informal British colony until a hundred years ago. The most interesting find was enormous quantities of pottery of uncertain age and affiliations which cannot be dealt with here, but in addition to this a gecko turned up in a sackful of lizards which had been bought as food for snakes. According to Parker (1940) this gecko is a new species of *Sphaerodactylus*, a genus which extends all over the Central American and West Indian regions and contains many species, some of which are peculiar to single islands. The Antillean species are distinguished by possessing a groove down the back with very small scales, a feature which is missing in the mainland forms. This Bay Island gecko (*Sphaerodactylus rosaurae* Parker), though so close to the mainland of Honduras, has the groove and small scales, and in this way resembles species living 2,000 miles further east.

We paid three visits to the Bay Islands and two to Swan Islands. The latter are two small coral islands, remarkably interesting to a biologist. They lie about 150 miles off the north-east corner of Honduras, and are surrounded by water of 1,000 fathoms and over ; each island is about a mile and a half long by a mile wide, is composed chiefly of coral limestone, and is densely forested. The western island has a landing-beach and is inhabited by 21 Cayman islanders who grow coco-nuts. They have cattle on the island and rather surprisingly were able to sell us a sheep. This island was used as a careening place by one of the later pirates, Captain Swan, who gave his name to it. There is a large kitchen-midden on the western island containing crude pottery and burnt shells, which shows that Indians once lived there.

The eastern island has no beach and is surrounded by cliffs of 30 to 40 feet, very rough and sharp, which make landing difficult ; it has apparently never been inhabited, even by Indians. It is thickly wooded and has a remarkable fauna, including earthworms, millipedes, centipedes, at least eight species of land gastropods, an iguana, a lizard, a snake, many species of bird, and a mammal peculiar to the island, *Capromys thoracatus*. This is a kind of cavy, about the size of a muskrat but with very coarse fur. It must have as small a range as any mammal ; the other species of the genus are confined to Cuba and Jamaica.

In Stations 28 (off the Bay Islands) and 42 (off N.E. Brazil) we caught in the stramin net 3 and 2 specimens respectively, all young, of the extraordinary deep-sea cephalopod *Vampyroteuthis infernalis*, of which less than a hundred specimens appear to exist. These larvae have been described in detail by Pickford (1939).

Another catch of note was off Grenada in Station 34. Most of the Antilles are very steep-to and surrounded by water too deep for us to dredge in, but three miles off St. George, Grenada, there is a shelf at 450 fathoms on which we towed the Agassiz trawl. It fouled the bottom after 15 minutes, bringing the ship up and bending the trawl frame, but the wire held and the net was undamaged. The bottom appears to be covered with a finely-branching primnoid alcyonarian, *Stenella*, and a singularly beautiful sponge, *Aphrocallistes*. About two bushels of these were in the net, and among them was a remarkable lobster, *Phoberus caecus*, which is one of the largest known deep-sea crustacea. It was pink, with vestigial eyes and very long chelipeds armed with long and very sharp teeth ; the carapace was spiny and rather thin, while the antennae were like wire and over 2 feet in length. As far as I know, only two individuals of this species have been caught before, both by the " Blake " in 1878 on the same grounds ; we were within a mile of the " Blake's " position.

Off the River Orinoco we used the ship's otter trawl three times in order to get some food-fish for the larder. In this we had no luck, but the trawl brought up a number of interesting invertebrates, including the only crinoids caught on the trip and a very fine basket star-fish, *Astrophyton muricatum*. The latter was contracted into a tight ball as big as one's fist but expanded nicely in a bath. It was narcotized successfully with menthol and pickled at its fullest extent. The length of one of the long arms was 47 cm., and the whole animal when extended was more than a yard across.

The rivers of northern British Guiana form an anastomosing series of tidal streams with remarkably turbid water. I collected samples of the water in the Barima and Demerara Rivers, and these have been examined by Dr. L. H. N. Cooper for their light penetration values. These values are so low that it is difficult to understand how any effective photosynthesis can take place in these streams ; nevertheless the animal population is both abundant and varied, including microphagous feeders such as copepods and even bottom-living barnacles, and in the Demerara there were enormous numbers of drifting algae. These water-samples, with some others collected for comparison in the Gambia River, will be discussed by Dr. Cooper and myself in a subsequent paper in this series.

Off northern Brazil we got remarkable catches of pelagic molluscs, including pteropods, heteropods, squids and octopus, and at one station (41) the stramin net

distinguished itself by catching a 7-foot blue shark, *Carcharinus* sp. The shark, an immature female, came in dead, but was accompanied by four live remoras. The shark's stomach was quite empty.

To a marine biologist perhaps the most interesting part of the cruise was the crossing of the Central Atlantic from Pernambuco to the Gambia River. Three deep plankton hauls were taken (Stations 43, 45 and 46), in different bodies of water. The two southern stations, in the Equatorial current, were distinguished from all the other midwater hauls in producing neither red *Sagittae* nor red prawns such as *Acanthephyra*. Station 46 was in the east-going Guinea current, where *Acanthephyra* and red *Sagittae* reappeared.

Several remarkable animals were found in these stations. Three squids in particular were unlike any others we caught. One, *Calliteuthis hoylei*, was rufous brown, with markedly retractile and protrusible eyes, and was scattered all over with powerful light organs equipped with lenses ; it must be a brilliant object when illuminated. The other two both had crumpled bag-like bodies, translucent and colourless, and belonged to the group Cranchiidae. Each had two long tentacles dotted with chromatophores, but whereas one had arms of moderate length and very prominent but unstalked eyes, the other had excessively small arms and huge eyes on stalks ; this last has been identified as *Bathothauma lyromma*. Chun (1910, 1915) figures similar forms tightly blown up and consequently streamlined, but our specimens were half deflated while still alive. It is hard to believe that they are very active creatures.

Amphipods were specially numerous in the Central Atlantic, and included several *Phronimae* which actively paddled their cases about for some time after being caught ; but the finest was a perfect specimen of *Cystisoma* about 5 inches in length, colourless except for a yellow stomach and a very faint pink tinge to the legs. It was so transparent that in water the stomach was the only part to be seen, not even the brain and nerves becoming visible until after the animal had been killed and left in formalin for some time. The eyes were enormous, covering the whole dorsal surface of the head, but were colourless and as transparent as the rest of the body. It is hard to understand how these animals can see at all clearly.

An interesting visit was paid to St. Paul's Rocks, which are right in the middle of the Atlantic Ocean, less than a degree north of the Equator. The rocks are only 60 feet high at the most and the most southerly point is less that 300 yards from the most northerly ; probably no part is as much as 10 yards from the sea. This tiny landmass is apparently not of volcanic origin, but is formed of plutonic rocks ; it can with some justice be considered as the world's smallest continent. The rocks stand in 20 or 30 fathoms on a shelf only about half a mile wide, which is surrounded on all sides by water more than 2,000 fathoms deep. As far as we could make out from our echo-sounding gear the sides of the shelf are virtually perpendicular, a feature reminiscent of coral-reefs. No coral, however, is known to occur on St. Paul's Rocks, and they are certainly not a coral-reef. This absence of coral is not easy to understand. When we were there (28.xii.37) the sea-temperature was about 26°C., amply warm enough for reef-building corals, and as the rocks are less than a degree north of the equator it is not be expected that there is a large range of temperature. The rocks are set in the west-going Equatorial Current, which was

STATION LIST

"ROSAURA" EXPEDITION, 1937–1938

Station	Date	Position	Depth of sea	Gear	Depth of gear	Remarks
1	27.viii.37	65° 35′ N., 37° 20′ W.	30–50 m.	1. 2-ft. dredge 2. Silk townet	30–50 m. 15–20 m.	Angmagssalik Harbour (E. Greenland).
2	28.viii.37	No catch	—	—	—	—
3	2.ix.37	59° 46′ N., 45° 02′ W.	—	Silk townet	*c.* 15 m.	West Greenland Current.
4	3.ix.37 ,,	60° 30′ N., 46° 40′ W. 60° 35′ N., 46° 45′ W.	550 m. —	1. 3-ft. dredge 2. Silk townet	550 m. *c.* 20 m.	Off Julianehaab. ,, ,, (S.W. Greenland).
5	4.ix.37 ,, ,,	60° 43′ N., 46° 02′ W.	0–80 m.	1. 2 ft. dredge 2. Shore collecting rocks 3. Cod long line	*c.* 20 m. 80 m.	Julianehaab Harbour.
6	7.ix.37	60° 06′ N., 45° 25′ W.	110 m.	3-ft. dredge	110 m.	Off Nanortilik (S.W. Greenland).
7	9.ix.37 ,,	60° 17′ N., 44° 37′ W. 60° 16′ N., 44° 41′ W.	35 m. —	Silk townet Shore collecting	10 m. —	Tasermiut Fjord. ,, ,, (S.W. Greenland).
8	11.ix.37	58° 48′ N., 46° 11′ W.	> 2,750 m.	2-m. stramin net	1,300–0 m.	West Greenland Current.
9	22.ix.37 ,,	52° 13′ N., 55° 45′ W. ,,	— 30 m.	Shore collecting Dip net	— Surface	N.E. Arm, Horn Bay, Niger Sound, Labrador.
10	23.ix.37	52° 13′ N., 55° 47′ W.	15 m.	2-ft. dredge	15 m.	N.W. Arm, Horn Bay.
11	26.ix.37	49° 30′ N., 57° 48′ W.	215 m.	Agassiz trawl	215 m.	Bonne Bay, Newfoundland.
12	1.x.37	44° 03′ N., 64° 40′ W.	—	Shore collecting	—	Liverpool Bay, N.S.
13	10.x.37	36° 88′ N., 74° 23′ W.	> 1,800 m.	2-m. stramin net	750–0 m.	Between Gulf Stream and Coast. Probably in counter-current.
14	13.x.37	24° 53′ N., 77° 40′ W.	1,800 m.	2-m. ¼-in. meshed townet	900 m.–0 m.	Tongue of the Ocean (Bahamas Is.).

Station	Date	Position	Depth of sea	Gear	Depth of gear	Remarks
	16.x.37	19° 47′ N., 72° 12′ W.	—	Silk townet	Surface	Cap Haitien Harbour (Haiti). (Medusae only.)
15	17.x.37	18° 21′ N., 75° 25′ W.	*c.* 1,800 m.	2-m. stramin net	*c.* 1,250 m.–0	Between Cuba and Jamaica.
16	19.x.37	19° 18′ N., 81° 24′ W.	—	Shore collecting	Coral rock,	Georgetown, Grand Cayman.
	,,	19° 18′ N., 81° 22′ W.	2 m.	2-ft. dredge	2 m.	North Sound, ,, ,,
17. A	20.x.37	17° 24′ N., 83° 57′ W.	—	Land collecting	—	Western Swan Island.
B	21.x.37	17° 24′ N., 83° 54′ W.	—	,, ,,	—	Eastern ,, ,,
18	23.x.37	16° 24′ N., 86° 20′ W.	—	Shore collecting	—	George Cay, Port Royal, Roatan Is., Honduras.
19	24.x.37	16° 25′ N., 86° 16′ W.	—	,, ,,	—	Helene Is. Mangroves and coral rock.
20	25.x.37	16° 27′ N., 85° 56′ W.	—	Land collecting	—	Bonacca Is.
21	26.x.37	16° 29′ N., 85° 53′ W.	—	,, ,,	—	Bonacca Is. (All except the Oligochaets labelled Station *20*, but with the correct date, 26.x.37).
	27.x.37	16° 18′ N., 86° 35′ W.	—	Dip net	Surface	Coxen's Hole, Roatan Is.
	28.x.37	17° 28′ N., 88° 11′ W.	—	,,	,,	Belize Harbour, B.H.
22	29.x.37	,, ,,	6 m.	2-ft. dredge	6 m.	,, ,,
23	30.x.37	17° 29′ N., 88° 10′ W.	5 m.	Silk townet	2–3 m.	,, ,,
24	1.xi.37	17° 15′ N., 87° 49′ W.	—	Shore collecting	—	Indian Cay, Turneffe Is.
	,,	17° 16′ N., 87° 50′ W.	4 m.	2-ft. dredge	4 m.	Turneffe Is., B.H.
25	5.xi.37	17° 22′ N., 88° 20′ W.	4 m.	Silk townet	1 m.	North Lake, off Sibun River, B.H. Fresh water.
	,,	,, ,,	,,	2-ft. dredge	4 m.	
26	7.xi.37	17° 53′ N., 87° 44′ W.	*c.* 900 m.	Agassiz trawl	*c.* 900 m.	North of Turneffe Is.
27	8.xi.37	16° 22′ N., 86° 40′ W.	—	2-m. stramin net	*c.* 600 m.–0	Off W. end of Roatan Is.
28	12.xi.37	16° 44′ N., 85° 42′ W.	*c.* 3,000 m.	,, ,,	*c.* 1,100 m.–0	N. of Bonacca Is.

STATION LIST—*cont.*

Station	Date	Position	Depth of sea	Gear	Depth of gear	Remarks
29	14.xi.37	17° 19′ N., 83° 57′ W.	1,920 m.	Agassiz trawl	1,920 m.	6 miles S. of Swan Is. Catch, 1 fish.
30	15.xi.37	16° 43′ N., 83° 45′ W.	*c.* 1,000 m.	3-ft. dredge	*c.* 1,000 m.	N. of Bonacca Is. Catch *nil.*
31	16.xi.37	15° 54′ N., 82° 13′ W.	34 m.	,, ,,	34 m.	Off Gorda Cay, Mosquito Bank.
32	17.xi.37	12° 42′ N., 80° 25′ W.	? 2,000 m.	2-m. stramin net	900 m.–0	250 miles N.N.W. of Colon.
	21.xi.37	Cape San Blas, Panama	—	Shore collecting	—	*Littorina scabra.*
33	22.xi.37	11° 00′ N., 75° 43′ W.	*c.* 1,500 m.	2-m. stramin net	*c.* 1,200 m.–0	Off Puerto Colombia.
34	27.xi.37	12° 05′ N., 61° 49′ W.	720–800 m.	Agassiz trawl	720–800 m.	Off St. George, Grenada.
35	1.xii.37	9° 25′ N., 59° 52′ W.	86 m.	Otter trawl	86 m.	Off River Orinoco.
36	2.xii.37	7° 11′ N., 57° 59′ W.	20 m.	,, ,,	20 m.	Off Demerara.
37	6.xii.37	7° 47′ N., 58° 17′ W.	23 m.	,, ,,	23 m.	Off River Essequibo.
	7.xii.37	8° 37′ N., 60° 24′ W.	5 m.	2-ft. dredge	5 m.	Mouth of Barima River, Venezuela. Only dead bivalve shells.
38. A	8.xii.37	8° 15′ N., 59° 45′ W.	—	Silk townet	2 m.	Morowhana, Barima River, B.G. Salinity sample, bottle 139.
B	9.xii.37	,, ,,	12 m.	2-ft. dredge	12 m.	
39	10.xii.37	2 miles S. of St. 38	20 m.	2-m. stramin net	2–3 m.	Junction, Barima and Arouka Rivers, B.G. Salinity sample, bottle 147.
40	13.xii.37	Georgetown, B.G., Demerara River	—	Silk townet	2 m.	Salinity sample, bottle 153.
41	18.xii.37	0° 38′ S., 43° 42′ W.	2,050 m.	2-m. stramin net	900 m.–0	Off N. Brazil. Catch included a 7-foot shark.
42	21.xii.37	5° 51′ S., 34° 38′ W.	2,600 m.	,, ,,	1,200 m.–0	Off N.E. Brazil.

Station	Date	Position	Depth of sea	Gear	Depth of gear	Remarks
43	27.xii.37	3° 35′ S., 32° 20′ W.	2,000 m.	,, ,,	750 m.–0	12 miles N. of Fernando Noronha.
44	28.xii.37	0° 56′ N. c 29° W	50–60 m.	3-ft. dredge	50–60 m.	St. Paul's Rocks shoal.
	,,	,,		Silk townet	2 m.	Close to the Rocks.
45	29.xii.37	4° 15′ N., 26° 20′ W.	*c.* 4,500 m.	2-m. stramin net	900 m.–0	Northern edge of N. Equatorial Current.
46	30.xii.37	7° 27′ N., 23° 08′ W.	*c.* 4,400 m.	,, ,,	1,000 m.–0	Guinea Current.
47. A	2.i.38	13° 42′ N., 14° 58′ W.	9 m.	Silk townet	3 m.	Nianimaru, Gambia River.
B	3.i.38	,, ,,	9 m.	2-ft. dredge	9 m.	A. Salinity sample, bottle 1. B. Salinity sample, bottle 17.
48	3.i.38	13° 27′ N., 15° 47′ W.	9 m.	2-m. stramin net	3 m.	Tendeba, Gambia River. Salinity sample, bottle 23.
49	1.ii.38	28° 25′ N., 13° 34′ W.	*c.* 1,300 m.	Agassiz trawl	*c.* 1,300 m.	Between Fuerteventura Is. (Canaries) and Africa.

running at about 2 knots on the occasion of our visit. The islands are white with guano, as sooty and noddy terns and boobies all nest there. I believe the only plant life consists of unicellular algae, but a few insects and spiders have been recorded, probably from round the birds' nests which are made of the green alga *Caulerpa*. We were unable to land owing to the surf, but we got some plankton close to the rocks and also dredged in about 40 fathoms from " Rosaura." This was not easy as the bottom is excessively uneven, and also by the time that the dredge has been lowered the ship has nearly drifted off into deep water. All we got was a sponge with numerous epiphytes and commensal animals, and several fragments of algae, notably of *Caulerpa* and *Halimeda*, genera which are both characteristic of warm seas and especially of coral-reefs.

Our last haul was made with the Agassiz trawl in more than 700 fathoms between the Canaries and the African mainland. Our position coincided with that of Station 41 in the 1910 cruise of the " Michael Sars " (Murray & Hjort, 1912), and the two catches appear to have been very similar. We brought up many fish such as the macrurid *Coelorhynchus labiatus*, and a large number of eels, *Synaphobranchus pinnatus*, which were very much alive when they came up, about a score of them swimming out of the net when it reached the surface ; this was after they had been raised from a depth of 700 fathoms or so in just over half an hour. The catch included many abyssal crustacea, and also a number of soft flexible sea-urchins of the species *Sperosoma grimaldii* and *Calveriosoma hystrix*.

The whole collection from the cruise was deposited in the British Museum (Natural History).

I owe a great debt of gratitude to the late Lord Moyne for taking me on this cruise and for making these collections possible. I would also like to express my sincere thanks for the friendly co-operation of the late Captain H. M. S. Laidlaw, R.N.R., and the officers and crew of the " Rosaura," to whose collective skill the successful completion of these hauls was due.

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